Emergency Management Competency 1.1

Competency 1.1 **Emergency management personnel shall demonstrate a familiarity level knowledge of the relationship of other disciplines to the emergency management function and the ability to work with personnel in these other disciplines.**

1. Supporting Knowledge and Skills

a. Explain the roles and responsibilities of each of the following disciplines to emergency management:
   - Health Physics
   - Environmental Transport & Diffusion (air and water)
   - Industrial Hygiene
   - Chemistry
   - Biology
   - Worker and Public Health & Safety
   - Hazardous Materials (storage, handling, & transport)
   - Criticality Safety
   - Explosives Safety
   - Environmental Protection
   - Detection & Monitoring (radiological and non-radiological)
   - Consequence Assessment (models & codes)
   - Protective Measures (personnel protective equipment, sheltering, decontamination, evacuation, & relocation)
   - Fire Protection/Fire Suppression Operations
   - Operations & Maintenance
   - Security
   - Medical
   - Public Affairs
   - Legal

2. Self-Study Activities (corresponding to the intent of the above competency)

Below are two web sites containing many of the references you may need.

Web Sites		
Organization	**Site Location**	**Notes**
Department of Energy	http://wastenot.inel.gov/cted/stdguido.html	DOE Standards, Guides, and Orders
U.S. House of Representatives	http://law.house.gov/cfr.htm	Searchable Code of Federal Regulations

Scan the DOE Emergency Management Guides on consequence assessment, medical, public affairs, and hazards assessment.

Review the table on the following pages.

The Basic Relationship of Several Disciplines to Emergency Management	
Discipline	**Provides information on:**
Health physics	health effects and health consequences of radiation exposure
Environmental transport and diffusion	the movement of materials through the environment (air and water) and the dilution or concentration of these materials
Industrial hygiene	health effects due to worker exposure to hazardous materials and control of this exposure
Chemistry	characteristics and behavior of chemicals and composition of hazardous materials
Biology	effects of hazardous materials/environments on living organisms and the environment; how hazardous materials behave in living systems
Worker and public health and safety	the protection of worker and public health

The Basic Relationship of Several Disciplines to Emergency Management	
Discipline	**Provides information on:**
Hazardous materials	radiological and nonradiological materials that, when released, can cause harm to life, property, or the environment
Criticality safety	radiological processes and controls
Explosives safety	explosive hazards and precautions needed for handling and transport
Environmental protection	the prevention of environmental contamination by hazardous materials release
Detection and monitoring	monitors, alarms, and instrumentation available for detection of hazardous materials
Consequence assessment	likely targets of hazardous materials releases and the pathways and concentrations of these materials as they move in the environment through the use of computer-generated models
Protective measures	measures to be taken to protect worker and public health and safety from exposure to a hazardous materials release; includes sheltering, evacuation, relocation, or decontamination
Fire protection/fire suppression operations	understanding of the protective measures and building measures and equipment for response to a fire threat
Operations and maintenance	understanding of process works and maintenance necessary to identify potential hazards and dangers to worker and public health and safety
Security	building/facility/site control and access and safeguards and security issues
Medical	treatment of injured workers or the public
Public affairs	emergency information for the public; public affairs oversees the emergency public information program
Legal	liabilities and responsibilities related to emergency management

EXERCISE 1.1-A Define the term “hazardous materials.”

EXERCISE 1.1-B Explain the following emergency management concepts:
- Environmental transport and diffusion
- Detection and monitoring
- Consequence assessment
- Protective measures

EXERCISE 1.1-C Describe how knowledge of each of the following is essential to an effective emergency response:
- Fire protection/fire suppression operations
- Operations and maintenance

EXERCISE 1.1-D Explain the role of each of the following in an emergency management program:
- Security
- Medical
- Public affairs
- Legal

3. Summary

Emergency management provides protection to worker and public health through an understanding of hazards and their effects on living organisms and the environment. Effective emergency management requires an understanding and integration of several different disciplines. For example, hazards assessments and consequence assessments provide information on the characteristics of hazardous materials and their behavior and transport in the environment. An understanding of the characteristics of hazards (chemistry of hazardous materials, criticality safety, and explosives safety) provides information on the control and detection of and protection from, the hazards. Health physics and industrial hygiene provide information on the biological effects of the hazards on human health, and environmental studies provide an understanding of the impact of the hazards on the environment.

4. Exercise Solutions

EXERCISE 1.1-A Define the term “hazardous materials.”

ANSWER 1.1-A Hazardous materials are radiological and nonradiological materials that, when released, can cause harm to life, property, or the environment.

EXERCISE 1.1-B Explain the following emergency management concepts:

- Environmental transport and diffusion
- Detection and monitoring
- Consequence assessment
- Protective measures

ANSWER 1.1-B

Emergency Management Concepts	
Emergency Management Term	**Explanation**
Environmental transport and diffusion	Once a hazardous material is released into the environment it will be moved through the environment according to meteorological conditions and the characteristics of the hazard itself.
Detection and monitoring	Monitors can detect the presence/absence of a specific hazard and may in some cases provide a measurement of the concentration of the hazard.
Consequence assessment	This methodology tracks the hazard through the environment using computer-generated models that incorporate the characteristics of the hazard, method of release, meteorological conditions, and topography to predict the direction and concentration of the hazard as it moves through the environment.
Protective measures	These steps are taken by workers and the public to avoid exposure to a hazard as it moves through the environment.

EXERCISE 1.1-C Explain how knowledge of each of the following is essential to an effective emergency response:

- Fire protection/fire suppression operations
- Operations and maintenance

ANSWER 1.1-C Fire protection and fire suppression operations provide information useful in planning for and responding to a facility/building fire emergency.

An overall understanding of the operations and maintenance of a facility assists in the identification of hazards and the potential for hazardous releases. Knowledge of operations can also provide insight into administrative controls that can be used to reduce/minimize hazards on site.

EXERCISE 1.1-D Explain the role of each of the following in an emergency management program:

- Security
- Medical
- Public affairs
- Legal

ANSWER 1.1-D Security/law enforcement is responsible for controlling facility/site access during an emergency event, as well as responding to safeguards and security issues related to the emergency event.

The medical organization provides immediate treatment or transport to a medical facility for personnel injured as the result of an emergency.

The public affairs department ensures that emergency information is provided to employees and the public. The public affairs department is also responsible for briefing the media and for coordination and/or oversight of emergency public information activities.

The legal component of the contractor organization oversees liability issues of emergency management activities and the emergency management program.